

CLAIMS

What is claimed is:

1. A method for cutting a blade root retention slot in a turbine engine disk element, the method comprising:
 - forming a precursor slot in the element, the precursor slot having first and second sidewalls and a base;
 - subsequent to said forming, machining a convoluted profile into the first and second sidewalls; and
 - subsequent to said machining, passing a rotating bit through the precursor slot to machine said base, the bit rotating about an axis off-normal to a direction of said passing.
2. The method of claim 1 wherein said machining broadens and deepens the base.
3. The method claim 1 wherein the machining leaves at least a first portion of the base intact.
4. The method of claim 1 wherein the forming comprises machining with a grinding wheel rotating about a wheel axis essentially perpendicular to a direction of passing said grinding wheel and essentially circumferential to a central longitudinal axis of the disk element.
5. The method of claim 1 wherein the machining comprises machining with a profiling bit having a convoluted longitudinal profile complementary to said convoluted profile of said slot sidewalls.
6. The method of claim 1 wherein the passing smooths transitions between said first and second sidewalls and said base.
7. The method of claim 1 wherein during the passing, the bit axis essentially lies along a radial plane of the element at an angle of between 60° and 85° relative to said direction of said passing.
8. The method of claim 7 wherein during the passing the bit axis is inclined relative to said direction of said passing.

9. The method of claim 1 wherein the forming comprises machining with a grinding wheel having portions of different diameters for forming the precursor slot with said first and second sidewalls as stepped sidewalls.

10. The method of claim 1 wherein the passing increases an outward concavity of the base.

11. A method for cutting a blade root retention slot in a turbine engine disk element, the method comprising:

forming a precursor slot in the element, the precursor slot having first and second sidewalls and a base;

subsequent to said forming, passing a rotating bit through the precursor slot to machine said base, the bit rotating about an axis off-normal to a direction of said passing.

12. The method of claim 11 wherein:

the bit is an abrasive bit.

13. The method of claim 11 wherein:

the bit is an abrasive bit having a doubly convex surface portion used to machine said base.

14. The method of claim 11 wherein:

the forming comprises grinding with a grinding wheel.

15. The method of claim 11 wherein:

the forming comprises grinding with a series of grinding wheels of differing widths.

16. The method of claim 11 wherein:

the axis is between 5° and 30° off-normal to the direction of the passing.

17. The method of claim 16 wherein:

the axis is inclined relative to the direction of the passing.